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EXAMINER

GODDARD, BRIAN D

| ART UNIT | PAPER NUMBER |
|----------|--------------|
|----------|--------------|

2171

DATE MAILED: 08/29/2003

4

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/893,827

Applicant(s)

DUMAIS ET AL.

Examiner

Brian Goddard

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 17 January 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-41 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-41 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 June 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2,3.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 101***

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

1. Claims 27-38 and 41 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

Referring to claims 27-38, the claim limitations do not constitute a process, machine, manufacture, or composition of matter. Instead, these claims are directed to a "method for providing information retrieval" in an algorithmic format. This algorithm is an abstract idea, or a mere arrangement of data independent of physical data or matter, which cannot be classified into any of the statutory categories set forth above.

Claim 41 does not constitute a process, machine, manufacture, or composition of matter either. Instead, this claim is directed to "a signal" which is a natural phenomenon, and cannot be classified into any of the statutory categories set forth above.

2. To expedite a complete examination of the instant application, the claims rejected under 35 U.S.C 101 (nonstatutory) above are further rejected as set forth below in anticipation of applicant amending these claims to place them within the four statutory categories of invention.

### ***Claim Rejections - 35 USC § 102***

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The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1, 22-23, 26-27, 39 and 41 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 6,021,403 to Horvitz et al.

Referring to claim 1, Horvitz discloses an information retrieval system as claimed. See Figures 1-4, 12-16 & 21 and the corresponding portions of Horvitz' specification for this disclosure. In particular, Horvitz teaches "an information retrieval system [See Fig. 1], comprising:

a hierarchical analysis component [inference system 76] that receives a query [See Fig. 21] and processes probabilities [See column 23, lines 59-64] associated with N categories [inference graph topics 203], each category having one or more topics [See column 23, lines 61-62], N being an integer; and

an interactive component [See Fig. 4] that provides feedback [See step 190] derived from the query and the probabilities associated with the N categories and the one or more topics, the feedback being utilized [See step 194] to determine at least one category of the N categories to facilitate retrieval of at least one of the one or more topics" as claimed.

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Referring to claim 22, Horvitz discloses the information retrieval system as claimed. See Figures 17-21 and the corresponding portions of Horvitz' specification for this disclosure. In particular, Horvitz teaches the system of claim 1, as above, "wherein information is retrieved as part of a help system [200]" as claimed.

Referring to claim 23, Horvitz discloses the information retrieval system as claimed. See Figure 1 and the corresponding portion of Horvitz' specification for this disclosure. In particular, Horvitz teaches the system of claim 1, as above, "wherein information is retrieved from a network-based [See items 28 & 30] system [10]" as claimed.

Claim 26 is rejected on the same basis as claim 1. See the discussion regarding claim 1 above for the details of this disclosure.

Claims 27, 39 and 41 are also rejected on the same basis as claim 1. See the discussion regarding claim 1 above for the details of this disclosure.

4. Claims 1-4, 6-13 and 15-41 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent No. 6,567,805 to Johnson et al.

Referring to claim 1, Johnson discloses an information retrieval system as claimed. See Figures 1-4 and the corresponding portions of Johnson's specification for this disclosure. In particular, Johnson teaches "an information retrieval system, comprising:

a hierarchical analysis component [Search System 123] that receives a query [See step 201] and processes probabilities [confidence levels or scores] associated with

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N categories [See e.g. Fig. 3], each category having one or more topics [sub-categories], N being an integer; and

an interactive component [Dialog Manager 121] that provides feedback [interactive dialog] derived from the query and the probabilities associated with the N categories and the one or more topics [See Fig. 2 (Step 204) and Summary of the Invention, etc.], the feedback being utilized to determine [See Fig. 2 (Step 205)] at least one category [dialog categorization] of the N categories to facilitate retrieval of at least one of the one or more topics" as claimed.

Referring to claim 2, Johnson discloses the information retrieval system as claimed. See Figures 1 & 4 and the corresponding portions of Johnson's specification for this disclosure. In particular, Johnson teaches the system of claim 1, as above, "further comprising an automatic classifier construction component [Text Categorizer 122] that builds a top-level classifier [rule (See Fig. 4)] for the N categories [for each category in the hierarchy] and a sublevel classifier [rule (See Fig. 4)] for each category of the one or more topics [for each sub-category in the hierarchy] associated with the N categories" as claimed.

Referring to claim 3, Johnson discloses the information retrieval system as claimed. See column 4, lines 1-5 of Johnson's specification for the details of this disclosure. In particular, Johnson's classifiers are provided by at least one of a decision tree, similarity-based and Bayesian-based classification model as claimed.

Referring to claim 4, Johnson discloses the information retrieval system as claimed. See column 4, lines 5-7 and column 8, lines 19-38 of Johnson's specification

for the details of this disclosure. In particular, Johnson's automatic classifier construction component [Text Categorizer 122] employs a learning model [machine learning model (in general), symbolic rule induction (in preferred embodiment)] to build the classifiers as claimed.

Referring to claim 6, Johnson discloses the information retrieval system as claimed. See Figure 4 and the corresponding portion of Johnson's specification for this disclosure. In particular, Johnson teaches the system of claim 4, as above, "further comprising a data structure [Rule File 407] that includes a mapping [See column 8, lines 30-34] of I possible queries ['features in the text' (of the queries)] and one or more associated topics [category or categories], I being an integer, to enable learning for the classifiers" as claimed.

Referring to claims 7 and 8, Johnson discloses the information retrieval system as claimed. Again, see Figure 4 and the corresponding portion of Johnson's specification for this disclosure. In particular, Johnson's data structure [Rule File 407] is centrally located [See Fig. 4] and is updated via at least one of implicit and explicit user actions [See column 8, lines 24-30] as claimed.

Referring to claim 9, Johnson discloses the information retrieval system as claimed. See Figures 2-4 and the corresponding portions of Johnson's specification for this disclosure. In particular, Johnson's first classifier [Rule Applier 406] is employed to drive the sublevel classifiers at run time [See steps 204-205] to form a hierarchical classification structure [(of categories) See Fig. 3] as claimed.

Referring to claim 10, Johnson discloses the information retrieval system as claimed. See Figure 2 and the corresponding portion of Johnson's specification for this disclosure. In particular, the query and the first classifier "are employed to determine [Step 205] the most likely of the N categories" as claimed.

Referring to claim 11, Johnson discloses the information retrieval system as claimed. See Figure 2 and the corresponding portion of Johnson's specification for this disclosure. In particular, Johnson teaches the system of claim 10, as above, "further comprising a context disambiguation component [not numbered] that utilizes the query and the first classifier to determine the feedback [Step 204]" as claimed.

Referring to claim 12, Johnson discloses the information retrieval system as claimed. Again, see Figure 2 and the corresponding portion of Johnson's specification for this disclosure. Johnson teaches the system of claim 11, as above, "wherein the context disambiguation component utilizes the query and the feedback to drive the sublevel classifiers in order to determine a desired topic [Step 205]" as claimed.

Referring to claim 13, Johnson discloses the information retrieval system as claimed. See Figure 4 and the corresponding portion of Johnson's specification for this disclosure. In particular, Johnson's disambiguation component further comprises a presentation component [User Interface Manager 401] for interfacing to a user and an analytical component [Session Manager 402] to facilitate feedback and decision-making related to the feedback [See above] as claimed.

Referring to claim 15, Johnson discloses the information retrieval system as claimed. See column 9, lines 18-35 of Johnson's specification for this disclosure. In



particular, Johnson's analytical component includes a decision analysis [dialog categorization] for determining the nature and quantity of a clarification dialog as claimed.

Referring to claim 16, Johnson discloses the information retrieval system as claimed. See Figure 2 and the corresponding portion of Johnson's specification for this disclosure. In particular, Johnson's analytical component includes a computation [Step 205] of the value of information [confidence levels and scores] associated with feedback gained during a clarification dialog [dialog categorization] to guide the nature and quantity of the clarification dialog as claimed.

Referring to claim 17, Johnson discloses the information retrieval system as claimed. See Figures 2 & 4 and the corresponding portions of Johnson's specification for this disclosure. In particular, Johnson's analytical component employs a rule-based policy [406] that controls if and how dialog is invoked based on the distribution of probabilities [confidence levels] assigned to topics [sub-categories] at one or more layers of a classification scheme [hierarchy] as claimed.

Referring to claims 18 and 19, Johnson discloses the information retrieval system as claimed. See Figure 2 and the corresponding portion of Johnson's specification for this disclosure. In particular, Johnson's analytical component analyzes [Steps 204-205 & 207] probabilistic weights [confidence levels and scores] associated with each category and related subtopic [confidence levels] and spread across each category and subtopic [scores] for determining feedback and presentation to the user as claimed.

Referring to claim 20, Johnson discloses the information retrieval system as claimed. See column 1, line 65 – column 2, line 7 for the details of this disclosure. In particular, Johnson's presentation component includes a ranked display of most likely N categories ['a list of relevant categories (ranked by confidence level)' (Column 2, lines 3-4)] as claimed.

Referring to claim 21, Johnson discloses the information retrieval system as claimed. See column 1, line 65 – column 2, line 7 for the details of this disclosure. Johnson teaches the system of claim 20, as above, "wherein at least one of the most likely N categories [See claim 20 above] is selected [See column 2, lines 4-7] to provide a ranked display of one or more topics as claimed.

Referring to claims 22 and 23, Johnson discloses the information retrieval system as claimed. See the Field of the Invention description in column 1, lines 6-13 for this disclosure. In particular, Johnson's information retrieval system is a network-based [online] help system as claimed.

Referring to claim 24, Johnson discloses the information retrieval system as claimed. See column 4, lines 5-7 and column 8, lines 24-25 for the details of this disclosure. In particular, Johnson's probabilities [confidence levels] are determined via a hand-crafted analysis [constructed by hand] as claimed.

Referring to claim 25, Johnson discloses the information retrieval system as claimed. See Figure 3 and the corresponding portion of Johnson's specification for this disclosure. Johnson teaches the system of claim 1, as above, further comprising L

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levels [hierarchical levels] of N categories, each category having one or more topics [sub-categories], wherein L and N are integers as claimed.

Claim 26 is rejected on the same basis as claim 1. See the discussion regarding claim 1 above for this disclosure.

Claims 27-29 are rejected on the same basis as claims 1-3 respectively. See the discussions regarding claims 1-3 above for the details of this disclosure.

Claim 30 is rejected on the same basis as claim 6, in light of the basis for claim 29 above. See the discussions regarding claims 1-6 above for the details of this disclosure.

Claims 31 and 32 are rejected on the same basis as claim 8, in light of the basis for claim 30 above. See the discussions regarding claims 1-8 above for the details of this disclosure.

Claims 33-36 are rejected on the same basis as claims 9-12 respectively, in light of the basis for claim 28 above. See the discussions regarding claims 9-12 above for the details of this disclosure.

Claim 37 is rejected on the same basis as claim 15, in light of the basis for claim 27 above. See the discussion regarding claim 15 above for the details of this disclosure.

Claim 38 is rejected on the same basis as claim 17, in light of the basis for claim 35 above. See the discussion regarding claim 17 above for the details of this disclosure.

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Claims 39 and 41 are rejected on the same basis as claim 1. See the discussion regarding claim 1 above for the details of this disclosure.

Claim 40 is rejected on the same basis as claim 6. See the discussion regarding claim 6 above for the details of this disclosure.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Johnson.

Johnson's learning model is not explicitly associated with a Support Vector Machine employing Sequential Minimal Optimization (SMO) to train the classifiers as claimed. However, Johnson does state that any system that assigns categories to data

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containing text (classifier) could be used in the system and could be trained by any machine learning technique. See column 4, lines 1-7 of Johnson's specification for this disclosure. This provides direct suggestion for modifying Johnson's system to include other classifiers, such as support vector machines, trained by other machine learning techniques, such as SMO.

The examiner takes Official notice that support vector machines trained by sequential minimal optimization were classifiers of common practice in the art at the time the invention was made. It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement a support vector machine employing sequential minimal optimization as a classifier within Johnson's system because of Johnson's direct suggestion as provided above, and further because of the well-known benefit of SMO as a faster training system than most others.

7. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Johnson in view of U.S. Patent No. 5,835,087 to Herz et al.

Johnson's analytical component does not explicitly include a cost-benefit analysis considering the cost of the dialog with the information value of the dialog as claimed.

Herz discloses a system and method similar to that of Johnson, employing a cost-benefit analysis to consider the cost of interaction with a user compared to the benefit of information gathered. See column 41, line 51 – column 45, line 17 of Herz' specification for this disclosure.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to add Herz' cost-benefit analysis functionality to Johnson's system so as to consider the cost of the dialog with the information value of the dialog to obtain the invention as claimed. One would have been motivated to do so in order to maximize the relevance of retrieved information (benefit) while minimizing the usage of system resources (cost), as was a common desire of the art.

### ***Conclusion***

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

U.S. Patent No. 6,006,221 to Liddy et al., 6,289,353 to Hazlehurst et al., and 5,974,412 to Hazlehurst et al. are each considered particularly pertinent to applicants' claimed invention.

The remaining prior art of record is considered pertinent to applicants' disclosure and/or portions of applicants' claimed invention.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian Goddard whose telephone number is 703-305-7821. The examiner can normally be reached on M-F, 9 AM - 5 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Safet Metjahic can be reached on 703-308-1436. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-3900.

bdg



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